WHAT IS CLAIMED IS:

1. An opto-electronic device, comprising:

a multiple-section laser;

a modulator section monolithically-integrated with the laser; and

a circuit for adjusting a chirp of the opto-electronic device by applying a compensating electrical signal to one or more sections of the laser, wherein modulation of the laser by the modulator section causes a parasitic chirp effect and the compensating electrical signal is applied to another one of the sections of the laser to change a wavelength of the laser's output between and/or during a transition period between an optical on-state and an optical off-state of the modulator section of the laser.

2. The device of claim 1, wherein the laser is a widely-tunable laser.

3. The device of claim 1, wherein the modulator section comprises an electro-absorption modulator.

4. The device of claim 1, wherein the compensating electrical signal comprises data applied to the modulator section is inverted in sign and filtered to suitably emphasize leading and trailing edges of transitions in the data.

5. The device of claim 1, wherein amplitude adjustments are made to the compensating electrical signal.

6. The device of claim 1, wherein phase adjustments are made to the compensating electrical signal.

7. The device of claim 1, wherein delay adjustments are made to the modulator section signal.

8. The device of claim 1, wherein delay adjustments are made to the compensating electrical signal.

9. The device of claim 1, wherein the compensating electrical signal is optimized according to an emission wavelength of the laser's output in terms of amplitude, phase, electrical delay adjustment.

10. The device of claim 1, wherein the compensating electrical signal is derived from a calibration performed to optimize amplitude, phase, and electrical delay adjustment of the circuit.

11. The device of claim 10, wherein the compensating electrical signal is changed over time to compensate for fluctuations in characteristics of the laser.

12. The device of claim 1, wherein the compensating electrical signal is applied to a gain section of the laser to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

13. The device of claim 12, wherein the compensating electrical signal is applied to the gain section of the laser during the transition period between the optical on-state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

14. The device of claim 1, wherein the compensating electrical signal is applied to a forward biased phase section of the laser inside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

15. The device of claim 14, wherein the compensating electrical signal is applied to a forward biased phase section of the laser inside the laser's cavity during the transition period between the optical on-state and the optical off-state of the laser to

change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

16. The device of claim 1, wherein the compensating electrical signal is applied to a reverse or zero biased phase section of the laser inside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

17. The device of claim 16, wherein the compensating electrical signal is applied to the reverse or zero biased phase section of the laser inside the laser's cavity during the transition period between the optical on-state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

18. The device of claim 1, wherein the compensating electrical signal is applied to a forward biased phase section of the laser outside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

19. The device of claim 1, wherein the compensating electrical signal is applied to a reverse biased phase section of the laser outside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

20. An apparatus for chirp control of an integrated laser-modulator having multiple sections, comprising:

a circuit for adjusting a chirp of a laser by applying a compensating electrical signal to one or more sections of the laser, wherein modulation of the laser by a modulator section causes a parasitic chirp effect and the compensating electrical signal is applied to another one of the sections of the laser to change a wavelength of the laser's

output between and/or during a transition period between an optical on-state and an optical off-state of the modulator section of the laser.

21. The apparatus of claim 20, wherein the laser is a widely-tunable laser.

22. The apparatus of claim 20, wherein the modulator section comprises an electro-absorption modulator.

23. The apparatus of claim 20, wherein the compensating electrical signal comprises data applied to the modulator section is inverted in sign and filtered to suitably emphasize leading and trailing edges of transitions in the data.

24. The apparatus of claim 20, wherein amplitude adjustments are made to the compensating electrical signal.

25. The apparatus of claim 20, wherein phase adjustments are made to the compensating electrical signal.

26. The apparatus of claim 20, wherein delay adjustments are made to the modulator section signal.

27. The apparatus of claim 20, wherein delay adjustments are made to the compensating electrical signal.

28. The apparatus of claim 20, wherein the compensating electrical signal is optimized according to an emission wavelength of the laser's output in terms of amplitude, phase, electrical delay adjustment.

29. The apparatus of claim 20, wherein the compensating electrical signal is derived from a calibration performed to optimize amplitude, phase, and electrical delay adjustment of the circuit.

30. The apparatus of claim 29, wherein the compensating electrical signal is changed over time to compensate for fluctuations in characteristics of the laser.

31. The apparatus of claim 20, wherein the compensating electrical signal is applied to a gain section of the laser to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

32. The apparatus of claim 31, wherein the compensating electrical signal is applied to the gain section of the laser during the transition period between the optical on-state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

33. The apparatus of claim 20, wherein the compensating electrical signal is applied to a forward biased phase section of the laser inside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

34. The apparatus of claim 33, wherein the compensating electrical signal is applied to a forward biased phase section of the laser inside the laser's cavity during the transition period between the optical on-state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

35. The apparatus of claim 20, wherein the compensating electrical signal is applied to a reverse or zero biased phase section of the laser inside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

36. The apparatus of claim 35, wherein the compensating electrical signal is applied to the reverse or zero biased phase section of the laser inside the laser's cavity

during the transition period between the optical on-state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

37. The apparatus of claim 20, wherein the compensating electrical signal is applied to a forward biased phase section of the laser outside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

38. The apparatus of claim 20, wherein the compensating electrical signal is applied to a reverse biased phase section of the laser outside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

39. A method of chirp control of an integrated laser-modulator having multiple sections, comprising:

adjusting a chirp of a laser by applying a compensating electrical signal to one or more sections of the laser, wherein modulation of the laser by a modulator section causes a parasitic chirp effect and the compensating electrical signal is applied to another one of the sections of the laser to change a wavelength of the laser's output between and/or during a transition period between an optical on-state and an optical off-state of the modulator section of the laser.

40. The method of claim 39, wherein the laser is a widely-tunable laser.

41. The method of claim 39, wherein the modulator section comprises an electro-absorption modulator.

42. The method of claim 39, wherein the compensating electrical signal comprises data applied to the modulator section is inverted in sign and filtered to suitably emphasize leading and trailing edges of transitions in the data.

43. The method of claim 39, wherein amplitude adjustments are made to the compensating electrical signal.

44. The method of claim 39, wherein phase adjustments are made to the compensating electrical signal.

45. The method of claim 39, wherein delay adjustments are made to the modulator section signal.

46. The method of claim 39, wherein delay adjustments are made to the compensating electrical signal.

47. The method of claim 39, wherein the compensating electrical signal is optimized according to an emission wavelength of the laser's output in terms of amplitude, phase, electrical delay adjustment.

48. The method of claim 39, wherein the compensating electrical signal is derived from a calibration performed to optimize amplitude, phase, and electrical delay adjustment of the circuit.

49. The method of claim 48, wherein the compensating electrical signal is changed over time to compensate for fluctuations in characteristics of the laser.

50. The method of claim 39, wherein the compensating electrical signal is applied to a gain section of the laser to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

51. The method of claim 50, wherein the compensating electrical signal is applied to the gain section of the laser during the transition period between the optical on-

state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

52. The method of claim 39, wherein the compensating electrical signal is applied to a forward biased phase section of the laser inside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

53. The method of claim 52, wherein the compensating electrical signal is applied to a forward biased phase section of the laser inside the laser's cavity during the transition period between the optical on-state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

54. The method of claim 39, wherein the compensating electrical signal is applied to a reverse or zero biased phase section of the laser inside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

55. The method of claim 54, wherein the compensating electrical signal is applied to the reverse or zero biased phase section of the laser inside the laser's cavity during the transition period between the optical on-state and the optical off-state of the laser to change a wavelength of the laser's output during the transition period, thereby resulting in a phase shift of the laser's output.

56. The method of claim 39, wherein the compensating electrical signal is applied to a forward biased phase section of the laser outside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.

57. The method of claim 39, wherein the compensating electrical signal is applied to a reverse biased phase section of the laser outside the laser's cavity to change a wavelength of the laser's output during the transition period between the optical on-state and the optical off-state of the laser.